CLAIMS:

1. An X-ray imaging method comprising the following steps:

forming a set of a plurality of two-dimensional X-Ray projection images of a medical or veterinary object to be examined through a scanning rotation by an X-Ray source viz à viz said object, which X-Ray images are acquired at respective predetermined time instants with respect to a functionality process produced by said object;

from said set of X-Ray projection images reconstructing by back-projection a three-dimensional volume image of said object,

said method being characterized by deriving an appropriate motion correction for the respective two-dimensional images as based on a motion vector field, and subsequently from the various corrected two-dimensional images reconstructing the intended three-dimensional volume.

2. A method as claimed in Claim 1, wherein said motion correction is derived from reference images that are acquired in corresponding instants of the movement of the object in question that is substantially periodic, and which reference images have substantially differing projection orientations.

3. A method as claimed in Claim 2, wherein said corresponding instants refer to corresponding phases of a cardiac movement.

4. A method as claimed in Claim 3, wherein said movement is derived from following one or more feature points of the object, such as bifurcation points.

5. A method as claimed in Claim 1, and being based on feature extraction for deriving said motion vector field.

6. A method as claimed in Claim 1, wherein two-dimensional projections are corrected towards their calculated shape in a more advantageous phase of the motion by the functionality process of the object.

7. A method as claimed in Claim 1, through separating an estimated motion of parts of said object into a non-linear temporal component caused by overall contraction within said object, and a linear temporal component caused by overall rotation within said object.

8. A method as claimed in Claim 7, and in particularly applied to coronary arteries.

9. A method as claimed in Claim 2, wherein said projection orientations differ by an angle in a range between substantially 45 degrees and 90 degrees.

10. A method as claimed in Claim 1, for use with a coronary artery with a stent in place and an artery wall section of said artery being under investigation.

11. A method as claimed in Claim 1, whilst deriving said motion correction from physical elements present in the object, such as markers provided on a stent delivery catheter or on a guidewire.

12. A method as claimed in Claim 1, whilst including in said correction an overall translation pertaining to said object.

13. A method as claimed in Claim 1, whilst deriving an amount of movement correction from a measured distance between an identified two-dimensional marker/feature position and a reference two-dimensional marker/feature position, or through an ECG analysis, or through a combination of the two methods.

14. A method as claimed in Claim 1, whilst using built-in cardiac motion compensation for three-dimensional cardiac ROI reconstruction, and generating and overlaying multiple runs of a cardiac region whilst maintaining one or more markers at the same position, and by overlaying making the multiple cardiac ROI reconstructions.

15. A method as claimed in Claim 1, and applied to generating a four-dimensional data set.

16. A method as claimed in Claim 1, whilst determining a temporal gating as being based on a three-dimensional resolving of a feature point location.

17. A method as claimed in Claim 1, and including one or more steps of the following sequence of steps:

- Acquiring a rotational angiography data set from a calibrated system;
- Reconstructing a low-spatial-resolution volume data set for a specific heart phase;
- Estimating a three-dimensional centerline in the volume data;
- Forward projecting the volume data or the three-dimensional centerline into the successively acquired projections with different projection geometry;
- Using the forward projected volume or the centerline as an initial approximation for the correct motion-compensated projection for this viewing angle;
- Calculating a transformation matrix between the initial approximation and the real acquired projection at the current viewing angle;
- Transforming the acquired projection into the correct cardiac phase ;
- Incorporating the additionally acquired projections in the three-dimensional reconstruction procedure by the successive application of the above on any or all appropriate projections.

18. An X-Ray apparatus being arranged for implementing a method as claimed in Claim 1, and comprising an X-Ray facility for forming a set of a plurality of two-dimensional X-Ray projection images of an object to be examined through a scanning rotation by an X-Ray source vis à vis said object, which X-Ray images are acquired at respective predetermined time instants with respect to a functionality process produced by said object;

data processing means fed by said X-Ray facility for from said set of X-Ray projection images reconstructing by back-projection a three-dimensional volume image of said object,

and correcting means interacting with said data processing means for by deriving an appropriate motion correction for the respective two-dimensional images as based on a motion vector field, and for subsequently feeding the various corrected two-dimensional images to said data processing means for reconstructing the intended three-dimensional volume.